



# Rx Update

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## SIGNIFICANT DIFFERENCES BETWEEN ORAL AND IV DOSING

There can be significant differences between the oral and IV doses of certain medications, and doses may need to be adjusted when converting from one route to another. Some medications are well absorbed orally and bioavailability may reach close to 100%. These well-absorbed medications will generally have similar dosing between the oral and IV routes (e.g., levofloxacin, phenytoin, dexamethasone). Medications that are not well absorbed from the GI tract will generally have much higher doses orally than IV. It is important to realize these dosing differences, especially when converting a patient from an oral medication to an IV route. **A toxic dose may be given if the dose is not properly adjusted to account for route of administration.** The table below illustrates examples of medications that have different oral and IV doses.

Drugs with Significant Differences between Oral and IV Dosing\*

Medication	Usual Adult Oral Immediate-Release Dose	Usual Adult IV Dose	Bioavailability of Oral Drug
Diltiazem	20 to 90 mg	20 mg	35 to 40%
Enalapril	5 to 40 mg	1.25 to 5 mg (as enalaprilat)	60%
Hydromorphone	2 to 4 mg	0.4 to 0.8 mg	62%
Labetalol	100 to 400 mcg	0.25 to 0.5 mg/Kg	25 to 40%
Levothyroxine	150 mcg	75 mcg	48 to 80%
Metoprolol	50 to 100 mg	5 to 20 mg	50%
Morphine	5 to 30 mg	2 to 10 mg	20 to 40%
Nicardipine	20 to 40 mg	0.5 to 2.2 mg/hour	35%
Propranolol	10 to 100 mg	1 to 3 mg	30 to 70%
Verapamil	80 to 120 mg	5 to 10 mg	20 to 35%

\* This table is designed to show the differences between IV and PO doses. It is not designed to be used as a dosing conversion chart. These doses are not exact dosing equivalence and would not be appropriate for all indications.

Adapted from ISMP Medication Safety Alert. 2006; 11(1).

## LEVOTHYROXINE INJECTION ADMINISTRATION

UIHC will be changing how it dispenses and administers levothyroxine injection starting February 14, 2006. Levothyroxine injection is usually indicated for patients with myxedema crisis or coma or in cases where a patient has been unable to receive their oral maintenance doses for greater than 7 days. Due to the long half-life and duration of action of levothyroxine, patients on an oral maintenance dose of levothyroxine do not generally need to be converted to levothyroxine injection unless they are NPO for greater than 7 days. The intravenous dose is typically 50% of the oral dose when converting patients from oral to IV therapy.

Levothyroxine doses less than or equal to 150 mcg will be dispensed in a syringe (100 mcg/ml) and given IV push over 2 to 3 minutes. Doses greater than 150 mcg will be diluted in NS 50 ml and given over 15 to 30 minutes. Both will need to be administered immediately after preparation due to limited stability in solution.